(4.) THE MONBLL PROCESS.

In the year 1900 Ambrose Monell, of Pittsburg, took out a patent for a process to render possible the employment of pig iron in ordinary fixed open-hearth steel furnaces. It is characterised throughout by dephosphorisation of pig iron taking place before removal of large quantities of carbon, if ore in sufficiently large amounts is brought into action.

In carrying out the process, first a portion of the charge is charged cold into the furnace; then the usual lime addition together with ore equal to 20 per cent, on the weight of the iron. Afterwards the entire preparation is heated up to a red heat, and the remainder of the pig added thereon in the molten form. A lively formation of Ibasic slag takes place with rapid oxidisation of the phosphorus, silicon and manganese, and a portion of the carbon. Obviously here also the remaining in the furnace of the slag obtained was regarded as harmful, since it was specified that of this slag up to 80 per cent, should be drawn off after about an hour, and the metal should remain nearly uncovered. It was then decarburised in about five hours by means of further additions of ore. The process shows a gain in time over the usual, for in 40-ton furnaces it admitted of making 18 instead of 11 charges per week.

In the year 1902 Monell and Bees-James improved the process by employing the entire amount of pig iron in the molten state, and only charging it after the additions (25 per cent, sinter and 6 to 7 per cent, lifne, on weight of pig iron) were already heated to a white heat. Then, after a short time, 80 per cent, of the slag was removed and with rise of temperature and further additions of sinter it was decarburised in four hours or more.

(5.) PIG AND OIIE PROCESS WITH MOLTEN IEON IN ORDINARY FIXED OPEN-HEARTH FURNACES.

Shortage of scrap was also the cause of the general adoption of the pig and ore process in the South Eussian works of the Donetz-Jurjewka, Company.